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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/870,524      | 05/30/2001  | Tomoki Kobayashi     | IIW-002             | 1359             |

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EXAMINER

CREPEAU, JONATHAN

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1746

DATE MAILED: 03/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/870,524

Applicant(s)

KOBAYASHI ET AL.

Examiner

Jonathan S. Crepeau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 May 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 13 is rejected under 35 U.S.C. 102(e) as being anticipated by Voss et al (U.S. Patent 6,106,964). The reference is directed to a method for controlling the temperature of an oxidant supply gas to be supplied to a fuel cell (see col. 4, line 11). The method comprises the step of introducing the supply gas into a heat exchanger, and at the same time, introducing an exhaust gas discharged from the fuel cell into the heat exchanger to perform heat exchange between the gases (see col. 4, lines 15-28; Fig. 2).

Thus, the instant claim is anticipated.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voss et al. in view of Reiser (U.S. Patent 6,497,971).

Voss et al. is applied for the reasons stated above. Further, regarding claim 8, the reference teaches that the heat exchanger is a water-permeable membrane type humidifier (see col. 5, lines 32-52).

However, Voss et al. do not expressly teach a compressor functioning as a temperature control device located downstream of the fuel cell which compresses an exhaust gas, as recited in claims 1, 12, 14, and 15.

The patent of Reiser is directed to a fuel cell assembly in which blowers (i.e., compressors) 17A,B are located downstream of the cell stacks and suck oxidant reactant therethrough (see Fig. 6; col. 7, lines 19-24).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the fuel cell assembly of Reiser in the system of Voss et al. In column 2, line 26, Reiser teaches that an object of his invention is "to provide improved methods and apparatus for the delivery of input reactants to fuel cells." Accordingly, the artisan would be motivated to use the fuel cell assembly of Reiser in the system of Voss et al. The recitations in claims 12 and 14 that "a temperature controller [...] controls the temperature of the exhaust gas to be introduced into said heat exchanger" and "the temperature of the exhaust gas is controlled before it is introduced into the heat exchanger" are interpreted herein as requiring a temperature control step/device *between*

the fuel cell and the heat exchanger (that is, the fuel cell itself is not considered to be the temperature control device). The compressors of Reiser would inherently function to control the temperature of the oxidizing exhaust gas, as recited in these claims.

Regarding instant claims 2 and 9, which recite that a controller controls the pressure of the exhaust gas to be incorporated into the heat exchanger, the compressor of Reiser would also inherently perform this function. Regarding claims 3 and 4, which recite that the controller is controlled depending on the “demand” temperature of the supply gas, Reiser also fairly suggests this limitation. Reiser teaches in column 3, line 21 that “the method can also include determining a temperature characteristic of the fuel cell stack assembly and controlling the blower responsive to the temperature.” The disclosed “temperature characteristic of the fuel cell stack” fairly suggests the reactant input temperatures. Accordingly, claims 3 and 4 would be rendered obvious.

Regarding claims 5 and 6, which recite that the pressure of the exhaust gas is increased when the temperature of the supply gas is lower than the demand temperature and vice versa, Reiser also fairly suggests these limitations. In column 3, line 24, the reference teaches that “the step of controlling can include increasing the flow of the oxidizer when the temperature is below approximately a selected temperature and reducing the flow rate when the temperature is above approximately a[t] selected temperature.” Since increased flow rate corresponds to increased pressure, the subject matter of claims 5 and 6 would be rendered obvious. Furthermore, this disclosure would also render claim 16 obvious, which recites that the temperature of the exhaust gas is controlled by adjusting the flow rate of the exhaust gas.

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Regarding claim 7, the assembly of Reiser also comprises a control valve (53B, 56B; see Fig 6), which would also function to control the pressure of the exhaust gas to be incorporated into the heat exchanger of Voss.

Regarding claims 10 and 11, which recite that the pressure controller is controlled depending on the target humidity of the supply gas, Reiser also fairly suggests this limitation. In column 2, line 67, Reiser teaches that "the delivery of oxidizer [can be controlled] by the blowers responsive to the sensors. Sensors can be of several types and can include sensors for sensing temperature, voltage, current, oxygen concentration and humidity." This would fairly suggest to the artisan that the blower can be controlled based on the humidity of the supply gas.

Accordingly, the subject matter of claims 10 and 11 would be rendered obvious.

### ***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1, 2, 8, and 12-16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 09/908,204 (U.S. Pre-Grant Publication No. 2002/0034669) in view of Voss et al. The '204 application teaches all the claim limitations except the presence of a compressor *per se*, that the compressor controls the temperature and pressure of the exhaust gas, and the presence of a membrane-type humidifier for exchanging heat and humidity between supply and exhaust streams. As noted above, Voss et al. is directed to a membrane humidifier. In column 3, line 55, Voss et al. teach that their humidifier is "a simpler and more energy efficient means for pre-heating an humidifying reactant supply streams in a solid polymer fuel cell system[s]." Accordingly, an artisan would be sufficiently motivated to use such a humidifier in the system of the '204 claims. Furthermore, the "gas-sucking means" recited in the '204 claims suggests the instantly claimed compressor. Such compressor would inherently perform the control of the temperature and pressure of the exhaust gas as also recited in the instant claims. Accordingly, the instant claims define an obvious variation of the '204 claims.

This is a provisional obviousness-type double patenting rejection.

7. Claims 1-12 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 09/801,312 (U.S. Pre-Grant Publication No. 2001/0021468) in view of Reiser. The '312 claims recite a water-permeable type humidifier which transfers water from an exhaust stream to a supply stream. It is not expressly recited that that heat is also transferred, but this

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feature would be inherent in the humidifier of the '312 claims. The '312 claims also do not recite a compressor downstream of the fuel cell. However, as set forth in section 4 above, Reiser teaches this feature, therefore motivating the artisan to include such a compressor in the system of the '312 claims. Accordingly, the instant claims define an obvious variation of the '312 claims.

This is a provisional obviousness-type double patenting rejection.

### *Conclusion*

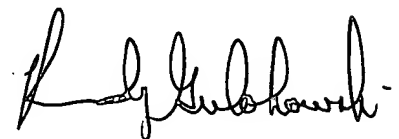
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-5408 or (703) 305-5433.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

February 28, 2003



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